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Ignite Application Performance with IBM's Complete APM Suite

How prepared are you for an application outage?



That's an uncomfortable question for many organizations—and it's getting more so by the day.

In the cases of applications driving internal services, the loss of team productivity generated by downtime is problematic enough. But for external services involving clients, customers, and business partners, "problematic" can easily become "disastrous."

Application downtime (or even a significant performance degradation) can lead in short order to poor customer experiences, reduced revenues, and diminished brand strength—situations that get worse the longer the application issue continues. Ultimately, the effect is to make the organization less competitive, at a time when the market demands a more competitive posture than ever.

That's why application owners and stakeholders are getting more and more directly involved in application performance. Yet as IT service delivery platforms have become more complex, automated, and sophisticated, a new approach to application performance management is typically required for those stakeholders to be satisfied.

Cloud computing, in particular, offers extraordinary power to scale applications—yet by its very nature, also creates new challenges for monitoring solutions. When the service delivery platform unpredictably creates new virtual servers and application instances, and the total resources available to those instances varies unpredictably based on workload demand, how can stakeholders ensure that application performance meets or exceeds critical targets? And when performance problems—or complete outages—do occur, how quickly can the root issues be determined and resolved, and the application be restored to proper working order?

Given the variety of IT infrastructures—ranging from traditional single-application servers to virtualized systems to an assortment of cloud models—it's clearly getting more difficult for organizations to answer those questions. Yet total business dependence on up-and-running applications is also increasing by the day.

Comprehensive APM capabilities for every scenario

By experimenting with different configurations of the VMware environment in a "what if" fashion, using a logical model of that environment, an optimized workload configuration can be established—helping organizations to get the highest possible overall application performance and the lowest possible risk of failure.

That's why IBM offers an exceptionally comprehensive suite of application performance management solutions. These solutions collectively empower organizations with the capabilities they need to keep applications running properly, no matter the IT infrastructure they've chosen (or even if they're utilizing a public cloud offering they themselves don't own).

Because IBM APM solutions are based on open standards, they support an exceptionally broad range of both IBM and third-party IT assets. Rather than locking organizations into a particular architecture, they allow choice over time, as needs and goals change.

And because they're part of the increasingly interoperable IBM Tivoli service management suite, they can also work in concert as required, providing a unified, holistic, end-to-end platform of application management for almost any business or IT context.

Enterprise-class oversight of critical applications

The flagship solution of the IBM APM suite is IBM SmartCloud Application Performance Management. Specifically designed for the advanced, dynamic nature of today's cloud and hybrid application infrastructures, this offering yields five different forms of insight into how well applications are performing (or will perform) against targets:

- Discovery. Before application performance issues can be assessed and resolved, it's essential to establish all the logical and physical elements that comprise that application, as well as their logical relationships to each other. And because a cloud is in a constant state of change, discovery must be automatic, ongoing, rapid, and accurate.
- End User Experience. How well (or how badly) does the application perform from the perspective of the end user? Ultimately, it's this that shapes the customer opinion of business services. That's why SmartCloud Application Management allows application stakeholders to approximate and quantify that experience—then improve it appropriately if issues turn up.
- Transaction Tracing. As applications execute in a cloud, many logical steps take place, often spanning different systems and information repositories. This capability provides insight into the exact sequence involved for any given business transaction involving the application.
- Diagnostics. It's not enough to know performance issues exist; those issues must be resolved to root causes, and those causes must be eliminated. Advanced diagnostics make that abstract goal a working reality.
- Predictive Analytics. The best possible outcome of application performance shortfalls is zero impact—that is, no one notices the problem existed at all. Since the only way to guarantee that outcome is to predict such shortfalls, by detecting and assessing problematic trends and patterns, the solution provides this as well.

Together, these capabilities help keep application stakeholders fully apprised not just of the minute-by-minute health of applications, but the specifics needed to understand how and why performance problems have emerged, as well as take swift and effective action to remediate those problems—even in the most advanced and dynamic private and hybrid cloud architectures.

Rapidly resolve application performance shortfalls in VMware environments

Not all organizations require the complete feature set of a flagship solution, of course. For mid-market organizations with less complex infrastructures or application portfolios, IBM SmartCloud Application Performance Management Entry Edition-VM Image may prove right on point.

This offering—a turnkey bundle of predefined virtual images—is intended specifically for the most widely deployed, x86-based virtualization environment: VMware. Essentially, it integrates with an existing VMware-based environment, providing a subset of SmartCloud APM capabilities that will nevertheless meet most mid-market requirements.

For instance, at-a-glance insight into the health of applications running in VMware servers is available via Web-based dashboards using any standard browser, on any workstation. This is exceptional convenience for administrators. Also helpful is the fact that the solution tracks the relationship between applications and physical resources, as well as inventory changes—all very useful in resolving performance shortfalls.

The included IBM Cognos-based business intelligence can also yield predictive insights similar to the analytics of the flagship solution. And by experimenting with different configurations of the VMware environment in a "what if" fashion, using a logical model of that environment, an optimized workload configuration can be established—helping organizations to get the highest possible overall application performance and the lowest possible risk of failure.

Get superior visibility into how applications are performing in public clouds

What about organizations whose application performance management needs don't revolve around their own infrastructures—but instead, public cloud infrastructures owned and managed by a third-party host?

That would seem a challenge for performance management solutions. The specifics of public cloud systems and resources are typically abstracted away from customer oversight, making it much harder to understand how the cloud is changing dynamically and to take appropriate steps to resolve detected performance issues.

Using IBM SmartCloud Monitoring—Application Insight though, this challenge is significantly reduced. That's because following a configuration process that requires only a few minutes, and no configuration at all, performance of applications running in third-party clouds can indeed be assessed in surprising detail.

How? The virtual machine images uploaded to the cloud will now contain smart monitoring capabilities; each time an image is provisioned to a new virtual server, that server can in turn be tracked, and the results rendered to the cloud customer in near real time (literally only a few seconds). Thus, it becomes possible for demand levels of a given application to be monitored, and the correlation between actual performance and

business targets continually assessed.

This rapid, accurate insight then makes it much simpler to resolve problems if performance problems do occur. For instance, if particular virtual servers are stalled, starving an application of the needed computational power, those servers are shown to be stalled in a Web dashboard. Application stakeholders can then take any necessary action to resolve the issue.

Diagnose Java application flaws—before they're rolled into production

Another common scenario pertinent to application performance management: the case of organizations that develop their own applications in Java, then deploy those applications in IBM WebSphere environments.

Here, the goal should be to perfect the application as completely as possible prior to actual deployment. The more feature-complete, bug-free, and high-performance that application can be made in development, the more business value it will ultimately yield—and the lower the odds it will have to be rolled back to development to address unacceptable flaws.

Helpful in making that happen: IBM Application Diagnostics Lite, an innovative new solution that provides extraordinary insight into exactly what's happening inside a Java application as it runs in a test system. Using its multiple forms of insight—which quantify among other things the time required by different kinds of system calls and methods, and the changing time required for business transactions over a given interval—it's much easier to understand how well a new application build is actually performing, and in the ways that matter most.

And if it's simply not performing up to specifications, it’s also much easier to zero in on the culprit, whether that culprit is a suboptimal algorithm, a problematic Java class, or any of a number of other possible causes.

Monitor the physical assets that make up your IT service delivery platforms

Finally, IBM also provides monitoring solutions that can play a key role in understanding the physical elements of cloud, virtualized, and traditional IT infrastructures.

These offerings—IBM Tivoli Monitoring and IBM SmartCloud Monitoring—use both agented and unagented methods to determine the assets involved in service delivery.

They then track performance of those assets in real time, empowering managers with a clearer understanding of configuration, performance, and other related data that could be useful in uncovering the root cause of an application failure.

For instance, even if a Java application is perfectly optimized and has all the processing power, memory, and data it requires to execute, it might still fail due to something as basic as a physical host's CPU overheating, a network switch that requires restarting, or inadequate storage.

In such cases, IBM's monitoring solutions can not only discover the problem, but in many cases, anticipate it. And when that happens, it can inform managers via predefined alerts sent as e-mail, thus helping them prevent an application failure from occurring, and reducing its real-world business impact to zero.

Additional information

→ Managing Critical Applications with IBM APM Solutions

→ IBM SmartCloud Application Performance Management

→ IBM SmartCloud Application Performance Management Entry Edition

→ IBM Application Performance Diagnostics

→ SmartCloud Monitoring—Application Insight

→ IBM SmartCloud Monitoring

→ IBM Tivoli Monitoring

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